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BULLETIN  
OF THE  
TORREY BOTANICAL CLUB.

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Vol. XVI.]

New York, February 5, 1889.

[No. 2.

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White Mountain Willows.—II.

By M. S. BEBB.

*SALIX PHYLICIFOLIA*, L. Carey, Gray's Man., Ed. 2. *S. chlorophylla*, And., Gray's Man. Ed. 5, excl. char. *S. chlorophylla*, var. *denudata*, And., DC. Prod.

This has been considered the rarest species of the little group of Alpine Willows found on the White Mountains, and certainly specimens available for study in even the largest herbaria of the country have been very meagre and unsatisfactory. We read, therefore, with surprise Mr. Faxon's statement that it is "probably more widely diffused than *S. argyrocarpa*, reaching the same upper limit, but descending a little lower"—and his ample collections within the range reported, viz., from 3,700 to 5,500 feet altitude above the sea, would seem to indicate no scarcity of individual plants. From Mr. Faxon's notes I compile the following list of particular localities: Oakes Gulf, Lake of the Clouds (where it appears to have most frequently attracted the attention of other collectors), Alpine Garden, Tuckerman's Ravine, Hermit Lake, Great Gulf, Spaulding's Spring, Madison Spring and Huntington's Ravine—"where it is quite abundant; but this ravine is so difficult and dangerous that I have never explored it much, not daring to do so alone."

*S. phyllicifolia* is also found on Mt. Mansfield, near the Lake of the Clouds, where it was first noticed by Mr. Pringle.

Mr. Faxon finds the species to vary in habit as follows:  
1. In the higher parts of the Alpine Garden, on Mt. Washington, alt. 5,500 ft., it is a depressed and prostrate shrub, seldom rising more than one foot from the ground, fruits rarely, and seems not to endure the rigor of the climate so well as the other Alpine species. 2. "In Oakes Gulf, Tuckerman's Ravine, and around

the Lake of the Clouds it is more erect,  $2\frac{1}{2}$  to 4 feet high, with stems 1 to  $1\frac{1}{2}$  inches in diameter, diffusely branched, sometimes with stems depressed, perhaps by snow, and only the branches ascending or upright." 3. "In the Great Gulf, near Spaulding's Lake, the altitude above the sea is nearly the same as the plant occupies in Tuckerman's Ravine on the opposite side of the mountain, but here it is protected by growing among alders and other small trees, and attains a height of 10 feet, with a stem 4 inches in diameter."

This last is one of Mr. Faxon's interesting discoveries, and gives to *S. phyllicifolia* as found in the White Mountains, the same range of variation in stature, dependent upon altitude and exposure, which the species exhibits in Europe.

The characters specified by Prof. Andersson as serving to distinguish his *S. chlorophylla* from the Old World *S. phyllicifolia*, are most noticeable in the Rocky Mountain *S. chlorophylla* var. *pycnostachya*, but when we come to compare the plant of the White Mountains and Labrador with the European prototype, we find the leaves are not "more or less covered with silky hairs," the aments are not "narrower and more compact," the capsule is not "shorter pedicelled," the style is not "longer." Absolutely no such differences exist, and Carey, Tuckerman, Barratt and all the early New England botanists were quite right in referring the plant in question to the old Linnæan species. Doubtless Prof. Andersson felt that it would be more convenient every way and would give a more "scientific frontier" to his new species *S. chlorophylla*, to draw the dividing line through the middle of the Atlantic; but, alas, willows will not grow to suit the dividing lines of the wisest of salicologists.

In approaching the study of American willows in their relationship with the European, Prof. Andersson makes the following observations: \* "Looking into the American Floras published by various authors since the time of Michaux, we find that the indigenous salices of America (with the exception of a few of the most arctic) all [*sic*] have names totally differing from the European species. Now this was hardly to be expected, when the well-known fact is considered that the vegetation of a large part

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\* Synopsis of North American Willows.

of the Northern regions is, I dare not say quite identical, but very uniform or homogeneous all round the world. Hence, although the indigenous Willows in America generally are considered different from those in the Old World, we should look for a greater resemblance than has as yet been recognized, not only in the higher Arctic regions (as partially shown in Hooker's Flora Boreali-Americana), but also in the more southern parts. And, in fact, my inquiries have persuaded me that the similarity or analogy in this respect is greater than is generally supposed. With my experience of the European willows, which frequently vary from one extremity of size, form, and color to another, according to the area of the species, \* \* \* I could not be surprised to find many American willows equally varying from ours, although certainly belonging to European types, or at least so analogous to their European relatives that they might be considered as sub-species of them." Good! But turning from this to the pages of the author's latest and most important work—the "Prodromus" monograph—we are surprised to find a wide and unexpected discrepancy between the words of the manifesto and the later performance. In only one single instance \* is any American willow before regarded as distinct now for the first time recognized as a sub-species of an European relative; while on the contrary, species are separated or new ones erected upon precisely those characters which the author's experience with Old World forms had already taught him were not to be relied upon.

The willow under consideration presents a case in point. In some of its forms it is so very like the European plant, that had Prof. Andersson himself encountered it in one of his Lapland excursions, he would have simply passed it by with the nod of recognition due an old acquaintance. Mr. J. G. Baker (to whose

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\* Even this is scarcely to be regarded as an exception! *S. rostrata*, Richards., is made a sub-species of co-equal rank with *S. livida*, Wahl., under the author's *S. vagans*—a new name for a new combination of old species, which not a single botanist on either side of the Atlantic has accepted. Andersson first proposed *S. vagans*, *cinerascens*, *occidentalis*, which Dr. Gray shortened into *S. livida* var. *occidentalis*; but whatever rank might be assigned the American plant, surely the old name of Richardson should have been retained, as indeed it was, later, by Prof. Andersson.

knowledge of the range of variation shown by *S. phylicifolia* Sir Joseph D. Hooker defers in his Student's Flora of the British Islands) writes me; "I have carefully examined the White Mountain willow, and felt quite satisfied in my own mind that it cannot be distinguished specifically from our European *phylicifolia*." This is temperate, but none the less decisive. I would, however, go further and say that often the resemblance is so close as to include even those slight peculiarities of "size, form and color," which we expect to find in two plants of the same species when growing side by side.

Will the reader bear with a bit of personal experience which brought this conviction home to my mind. Last winter I was comparing two sheets of loose specimens, spread out on the table before me; one set from the White Mountains, collected by Mr. Faxon; the other from Lapland, collected by Dr. Hakansson. Both were fresh, admirably prepared, and as it happened both had been taken in exactly the same stage of development. I had carelessly picked up a twig of fruiting aments to examine with the hand-magnifier, but when I came to return the specimen I had forgotten (or to be more exact, I had failed to notice in the first place) from which sheet it had been removed. Superficial resemblances or differences to guide me in replacing the specimen in hand there were none. I soaked up capsules of the two plants, American and European, placed them under the microscope and carefully compared every minute character of scale, pedicel, style, stigmas, etc. Mind, I was not looking for specific distinctions, I only wished to find *some slight individual peculiarity* which would enable me to replace my specimen. I felt piqued to think I should be so baffled, but finally, sooner than vitiate the integrity of the remaining material, I threw my twig of questionable belonging into the fire! I do not wish to be understood as making the sweeping assertion that all the White Mountain and Labrador *phylicifolia* is equally undistinguishable from the European, for I know very well that some forms can be, at once, recognized as peculiarly American. What I do claim is that from a meeting-ground of perfect similarity the American forms diverge not more widely than do the European of the same species.